

**ABSTRACT**

Sensors, sensor arrays and sensing methods provide for detection of a chemical analyte in a fluid. Sensors include a plurality of conductive and nonconductive regions in contact with a measuring apparatus. One or more sensors include a plurality of particles that include a metallic core. Preferably, the particles also include one or more capping ligands coupled to the metallic core. Exposure of the sensors to a fluid containing a chemical analyte causes the analyte to react with the metal core, preferably by displacing one or more of the capping ligands. The chemical analyte can be detected based on a change in electrical or optical properties of the sensors.

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